



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2022-0803; Project Identifier AD-2022-00732-E; Amendment 39-22107; AD 2022-14-02]**

**RIN 2120-AA64**

#### **Airworthiness Directives; CFM International, S.A. Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule; request for comments.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain CFM International, S.A. LEAP-1A23, LEAP-1A24, LEAP-1A24E1, LEAP-1A26, LEAP-1A26CJ, LEAP-1A26E1, LEAP-1A29, LEAP-1A29CJ, LEAP-1A30, LEAP-1A32, LEAP-1A33, LEAP-1A33B2, and LEAP-1A35A (LEAP-1A) model turbofan engines. This AD was prompted by a manufacturer investigation that revealed that certain high-pressure turbine (HPT) rotor stage 1 disks (HPT stage 1 disks) and a stages 6-10 compressor rotor spool were manufactured from material suspected to contain iron inclusion. This AD requires the replacement of certain HPT stage 1 disks and a stages 6-10 compressor rotor spool. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FAA must receive comments on this AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this final rule, contact CFM International, S.A., Aviation Operations Center, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45125; phone: (877) 432-3272; email: [fleetsupport@ge.com](mailto:fleetsupport@ge.com). You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0803; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The street address for the Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; email: [Mehdi.Lamnyi@faa.gov](mailto:Mehdi.Lamnyi@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

The FAA was notified by the manufacturer of the detection of iron inclusion in three non-LEAP-1A HPT rotor disks. Further investigation by the manufacturer determined that the iron inclusion is attributed to deficiencies in the manufacturing process. The investigation by the manufacturer also determined that certain CFM International, S.A. LEAP-1A HPT stage 1 disks and a stages 6-10 compressor rotor spool manufactured using the same process may have reduced material properties and a lower fatigue life capability due to iron inclusion, which may cause premature fracture and uncontained failure. This condition, if not addressed, could result in uncontained debris

release, damage to the engine, and damage to the aircraft. The FAA is issuing this AD to address the unsafe condition on these products.

### **FAA's Determination**

The FAA is issuing this AD because the agency has determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Related Service Information**

The FAA reviewed CFM International, S.A. Service Bulletin LEAP-1A-72-00-0474-01A-930A-D, Issue 001-00, dated June 10, 2022. The service information describes procedures for removing and replacing the HPT stage 1 disk and stages 6-10 compressor rotor spool.

### **AD Requirements**

This AD requires the replacement of certain HPT stage 1 disks and a stages 6-10 compressor rotor spool.

### **Interim Action**

The FAA considers this AD to be an interim action. This unsafe condition is still under investigation by the manufacturer and, depending on the results of that investigation, the FAA may consider further rulemaking action.

### **Justification for Immediate Adoption and Determination of the Effective Date**

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for "good cause," finds that those procedures are "impracticable, unnecessary, or contrary to the public interest." Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies foregoing notice and comment prior to adoption of this rule because the presence of iron inclusion in the HPT stage 1 disks and

stages 6-10 compressor rotor spool could lead to premature fracture and uncontained failure, which indicates an immediate safety of flight problem. The manufacturer identified 12 parts manufactured from material suspected to have iron inclusion and calculated reduced life limits for these parts. These parts are predicted to exceed the reduced life limits prior to October 2022 and will thus require replacement within the next 90 days. The longer these parts remain in service, past their calculated life, the higher the probability of failure. Therefore, the compliance time for the required actions is shorter than the time necessary to allow public comment and the FAA to publish a final rule. Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B).

In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forego notice and comment.

### **Comments Invited**

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “FAA-2022-0803 and Project Identifier AD-2022-00732-E” at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

### **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD

contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, and 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### **Regulatory Flexibility Act**

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

### **Costs of Compliance**

The FAA estimates that this AD affects 1 engine installed on airplanes of U.S. registry. The FAA estimates that zero engines installed on airplanes of U.S. registry require replacement of the stages 6-10 compressor rotor spool.

The FAA estimates the following costs to comply with this AD:

#### **Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Replace HPT stage 1 disk	8 work-hours x \$85 per hour = \$680	\$353,500	\$354,180	\$354,180
Replace stages 6-10 compressor rotor spool	8 work-hours x \$85 per hour = \$680	\$376,600	\$377,280	\$0

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator.

Subtitle VII: Aviation Programs describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866, and
- (2) Will not affect intrastate aviation in Alaska.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

### **§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**2022-14-02 CFM International, S.A.:** Amendment 39-22107; Docket No. FAA-2022-0803; Project Identifier AD-2022-00732-E.

**(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to CFM International, S.A. LEAP-1A23, LEAP-1A24, LEAP-1A24E1, LEAP-1A26, LEAP-1A26CJ, LEAP-1A26E1, LEAP-1A29, LEAP-1A29CJ, LEAP-1A30, LEAP-1A32, LEAP-1A33, LEAP-1A33B2, and LEAP-1A35A model turbofan engines with an installed:

(1) High-pressure turbine (HPT) rotor stage 1 disk (HPT stage 1 disk) with part number (P/N) and serial number (S/N) identified in Table 1 to paragraph (g)(1) of this AD; or,

(2) Stages 6-10 compressor rotor spool with P/N 2468M20G03 and S/N GWN1141P.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section; 7250, Turbine Section.

**(e) Unsafe Condition**

This AD was prompted by a manufacturer investigation that revealed that certain HPT stage 1 disks and a stages 6-10 compressor rotor spool were manufactured from material suspected to contain iron inclusion. The FAA is issuing this AD to prevent fracture and potential uncontained failure of certain HPT stage 1 disks and a stages 6-10 compressor rotor spool. The unsafe condition, if not addressed, could result in uncontained debris release, damage to the engine, and damage to the aircraft.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) At the next engine shop visit or before exceeding the cycles since new (CSN) threshold in Table 1 to paragraph (g)(1), whichever occurs first after the effective date of

this AD, or if the CSN threshold in Table 1 to paragraph (g)(1) has been exceeded as of this AD's effective date, within 50 flight cycles (FCs) from the effective date of this AD, remove the HPT stage 1 disk with P/N and S/N identified in Table 1 to paragraph (g)(1) of this AD from service and replace with an HPT stage 1 disk eligible for installation.

**Table 1 to Paragraph (g)(1) – HPT Stage 1 Disk**

<b>Part Name</b>	<b>P/N</b>	<b>Part S/N</b>	<b>CSN Threshold</b>
HPT Stage 1 Disk	2466M62G03	FGB0GLNA	6,097
HPT Stage 1 Disk	2466M62G03	FGB0GRE4	2,575
HPT Stage 1 Disk	2466M62G03	FGB0GWR5	2,892
HPT Stage 1 Disk	2466M62G03	FGB0G019	5,420
HPT Stage 1 Disk	2466M62G03	FGB0G0G9	5,140
HPT Stage 1 Disk	2466M62G03	FGB0G3E1	5,070
HPT Stage 1 Disk	2466M62G03	FGB0G320	5,500
HPT Stage 1 Disk	2466M62G03	FGB0G5L2	2,516
HPT Stage 1 Disk	2466M62G03	FGB0G440	2,076
HPT Stage 1 Disk	2466M62G03	FGB0G7K0	2,690
HPT Stage 1 Disk	2784M32G01	FGB0J76F	2,760

(2) At the next engine shop visit or before exceeding 7,290 CSN, whichever occurs first after the effective date of this AD, or if 7,290 CSN has been exceeded as of this AD's effective date, within 50 FCs from the effective date of this AD, remove the stages 6-10 compressor rotor spool with P/N 2468M20G03 and S/N GWN1141P from service and replace with a stages 6-10 compressor rotor spool eligible for installation.

**(h) Definitions**

(1) For the purpose of this AD, an “HPT stage 1 disk eligible for installation” is any HPT stage 1 disk that does not have a P/N and S/N identified in Table 1 to paragraph



(g)(1) of this AD.

(2) For the purpose of this AD, a “stages 6-10 compressor rotor spool eligible for installation” is any stages 6-10 compressor rotor spool that does not have P/N 2468M20G03 and S/N GWN1141P.

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j) of this AD and email to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(j) Related Information**

For more information about this AD, contact Mehdi Lamnyi, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7743; email: Mehdi.Lamnyi@faa.gov.

**(k) Material Incorporated by Reference**

None.

Issued on June 23, 2022.

Christina Underwood, Acting Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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